

PCT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

T :
BARBARA A. GYURE
AMERICAN HOME PRODUCTS CORPORATION
PATENT & TRADEMARK DEPARTMENT - 2B
ATTN: KEY E. BRADY, ONE CAMPUS DRIVE
PARSIPPANY, NJ 07054

PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing
(day/month/year)

30 APR 2001

Applicant's or agent's file reference

GI 5268A-PCT

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US99/29493

13 December 1999 (13.12.1999)

14 December 1998 (14.12.1998)

Applicant

GENETICS INSTITUTE, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile N . (703)305-3230

Authorized officer

Regina M. DeBerry

Telephone No. (703) 308-0196

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GI 5268A-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/29493	International filing date (day/month/year) 13 December 1999 (13.12.1999)	Priority date (day/month/year) 14 December 1998 (14.12.1998)
International Patent Classification (IPC) or national classification and IPC IPC(7): C12N 15/12, 15/85; C07K 14/52 and US Cl.: 435/69.1; 435/320.1; 435/325		
Applicant Genetics Institute, Inc.		

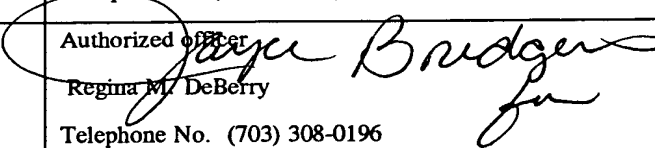
1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12 July 2000 (12.07.2000)	Date of completion of this report 10 April 2001 (10.04.2001)
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer  Regina M. DeBerry Telephone No. (703) 308-0196

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/US99/29493

I. Basis of the report**1. With regard to the elements of the international application:***

- ☒ the international application as originally filed.
- ☒ the description:
pages 1-34 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the claims:
pages 35-43, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the drawings:
pages 1-4, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.
- ☒ the sequence listing part of the description:
pages 1-8, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.These elements were available or furnished to this Authority in the following language US which is:

- ☒ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in printed form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/US99/29493

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. STATEMENT**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-47</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-47</u>	NO
Industrial Applicability (IA)	Claims <u>1-47</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS (Rule 70.7)

Claims 1-47 lack novelty under PCT Article 33(2) as being anticipated by Collins *et al.* (US Patent No. 5,710,023). Claims 1-15, 17, 25, 34-37 in the instant application are anticipated by Collins *et al.* (in claims and column 1, paragraph 6-column 3). Claims 22-24, 45-47 in the instant application are anticipated by Collins *et al.* (in column 3, 4th paragraph). Claims 16, 19, 20, 21 in the instant application are anticipated by Collins *et al.* (in column 3, paragraphs 1-3). Claims 26-27 in the instant application are anticipated by Collins *et al.* (in column 3, lines 4-12). Claim 28 in the instant application is anticipated by Collins *et al.* (in column 9, 3rd paragraph). Claims 29-31 in the instant application are anticipated by Collins *et al.* (in column 8, 1st paragraph). Claims 32, 33 in the instant application are anticipated by Collins *et al.* (in column 3, 5th paragraph). Claims 38-44 in the instant application are anticipated by Collins *et al.* (in column 8, 1st paragraph and column 9, 3-4th paragraph).

----- NEW CITATIONS -----

US 5,710,023 A (COLLINS *et al.*) 20 January 1998

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/US99/29493

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Certain Documents Cited

1. Certain published documents (Rule 70.10)

Application No

Publication Date

Filing Date

Priority date (valid claim)

Patent No.

(day/month/year)

(day/month/year)

(day/month/year)

None

None

None

None

2. Non-written disclosures (Rule 70.9)

Date of written disclosure referring to
non-written disclosure

Date of non-written disclosure

Kind of non-written disclosure

(day/month/year)

(day/month/year)

None

None

None

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/US99/29493

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To: SUZANNE A. SPRUNGER
AMERICAN HOME PRODUCTS CORPORATION
PATENT & TRADEMARK DEPARTMENT-2B
ATTN: KEY E. BRADY
ONE CAMPUS DRIVE
PARSIPPANY, NEW JERSEY 07054

CC: RADNOR

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference GI 5268A-PCT	Date of Mailing (day/month/year) 25 APR 2000
International application No. PCT/US99/29493	FOR FURTHER ACTION See paragraphs 1 and 4 below
Applicant GENETICS INSTITUTE, INC.	International filing date (day/month/year) 13 DECEMBER 1999

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06

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer FOZIA HAMUD	JOYCE BRIDGERS PARALEGAL SPECIALIST CHEMICAL MATRIX
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0190	(See notes on accompanying sheet)

CC: GENETICS

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference GI 5268A-PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5	
International application No. PCT/US99/29493	International filing date (day/month/year) 13 DECEMBER 1999	(Earliest) Priority Date (day/month/year) 14 DECEMBER 1998
Applicant GENETICS INSTITUTE, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title.

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract.

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. _____

- ☐ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/99/29493

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) Please See Extra Sheet.

US CL 435/69.51, 471, 252.3, 325, 7.1; 530/351, 389.1; 424/85.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/69.51, 471, 252.3, 325, 7.1; 530/351, 389.1; 424/85.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

West, US Patent full, STN via medline, caplus, embase and biosis.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	WO 97/15663 A1 (AMRAD OPERATIONS PTY LTD.) 01 May 1997 (01.05.97), see especially page 3, lines 19-25; page 17, lines 23-27; page 28, lines 6-11; page 31, lines 1-2; page 22, lines 5-11; page 38, lines 1-15; page 18, lines 1-14 and claims.	1-30, 33-37, 39-41,45 ----- 31, 32, 38, 42-44, 46-47
A	US 5,696,234 A (ZURAWSKI et al) 09 December 1997 (09.12.97), see entire document.	1-47
A	US 5,599,905 A (MOSLEY et al) 04 February 1997 (04.02.97), see entire document.	1-47
A	OBIRI et al. Receptor for Interleukin 13: Interaction with interleukin 4 by a mechanism that does not involve the common γ chain shared by receptors for interleukins 2, 4, 7, 9 and 15. The Journal of Biological Chemistry. 14 April 1995, Vol. 270, No. 15, pages 8797-8804, see entire document.	1-47

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

07 APRIL 2000

Date of mailing of the international search report

25 APR 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

FOZIA HAMUD

Telephone No. (703) 308-0196

JOYCE BRIDGERS
PARALEGAL SPECIALIST
CHEMICAL MATRIX

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/29493

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZURAWSKI et al. The Primary Binding Subunit of the Human Interleukin-4 Receptor Is Also a Component of the Interleukin-13 Receptor. The Journal of Biological Chemistry. 09 June 1995, Vol. 270, No. 23, pages 13869-13878, see entire document.	1-47
A	VITA et al. Characterization and Comparison of the Interleukin 13 Receptor with the Interleukin 4 Receptor on Several Cell Types. The Journal of Biological Chemistry. 24 February 1995, Vol. 270, No. 8, pages 3512-3517 see entire document.	1-47

INTERNATIONAL SEARCH REPORT

International application No.

P 99/29493

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7):

C12N 15/12, 15/19, 5/00, 5/10; C07K 14/47, 14/52; A16K 38/17, 38/20, 48/00

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REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

PCT/US 99/29493

International Application No.

International Filing Date

C/3.12.99)
13 DEC 1999

PCT INTERNATIONAL APPLICATION
Name of receiving Office: "Patent International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) GI 5268A-PCT

Box No. I TITLE OF INVENTION	
CYTOKINE RECEPTOR CHAIN	
Box No. II APPLICANT	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	
GENETICS INSTITUTE, INC. 87 CambridgePark Drive Cambridge, Massachusetts 02140 United States of America	
<input type="checkbox"/> This person is also inventor. Telephone No. (617) 876-1170 Facsimile No. (617) 876-5851 Teleprinter No.	
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input checked="" type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	
JOHNS HOPKINS UNIVERSITY 615 North Wolfe Street Baltimore, Maryland 21205 United States of America	
This person is: <input checked="" type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)	
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input checked="" type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input checked="" type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
SPRUNGER, Suzanne A. AMERICAN HOME PRODUCTS CORPORATION Patent & Trademark Department - 2B Attn: Kay E. Brady One Campus Drive Parsippany, New Jersey 07054 United States of America	
Telephone No. (617) 665-8284 Facsimile No. (617) 876-5851 Teleprinter No.	
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTOR(S)*If none of the following sub-boxes is used, this sheet is not to be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

COLLINS, Mary
54 Rathburn Road
Natick, Massachusetts 01760
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

DONALDSON, Debra
108 Blakely
Medford, Massachusetts 02155
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

FITZ, Lori
13 Palmer Street
Arlington, Massachusetts 02174
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

NEBEN, Tamlyn
1115 Danforth Lane,
Walnut Creek, California 94598
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTOR(S)*If none of the following sub-boxes is used, this sheet is not to be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

WHITTERS, Matthew J.
14 Brenton Wood Road
Hudson, Massachusetts 01749
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

WOOD, Clive
2 Hawthorne Place, #17R
Boston, Massachusetts 02114
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

WILLS-KARP, Marsha
JOHNS HOPKINS UNIVERSITY
615 North Wolfe Street
Baltimore, Maryland 21205
United States of America

This person is:

- ☐ applicant only
☐ applicant and inventor
☒ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) (GW : Guinea-Bissau)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|--|--|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input type="checkbox"/> GW Guinea-Bissau | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IS Iceland | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KR Republic of Korea | Check-boxes reserved for designating States (for the purposes of |
| <input checked="" type="checkbox"/> KZ Kazakhstan | a national patent) which have become party to the PCT after |
| <input checked="" type="checkbox"/> LC Saint Lucia | issuance of this sheet: |
| <input checked="" type="checkbox"/> LK Sri Lanka | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> LR Liberia | <input type="checkbox"/> |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

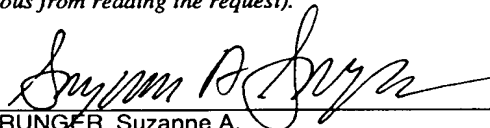
Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1) (14.12.98) 14 December 1998	09/211,335	US		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): (1)

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY	
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA/ US	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number Country (or regional Office)

Box No. VIII CHECK LIST: LANGUAGE OF FILING	
This international application contains the following number of sheets: request : 5 description (excluding sequence listing part) : 34 claims : 9 abstract : 1 drawings : 4 sequence listing part of description : 8 Total number of sheets : 61	This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input checked="" type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input checked="" type="checkbox"/> other (specify): Statement Pursuant to 37 CFR 1.821(f)
Figure of the drawings which should accompany the abstract: 1	Language of filing of the international application: US

Box No. IX SIGNATURE OF APPLICANT OR AGENT	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request). <div style="text-align: center; margin-top: 20px;">  SPRUNGER, Suzanne A. </div> <div style="text-align: right; margin-top: 20px;"> (13.12.99) </div>	

For receiving Office use only		2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:	301 Rec'd PCT/PTO 13 DEC 1999	
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA/US	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid	

For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	

Form PCT/RO/101 (last sheet) (July 1998) LegalStar 1998, Form PCTREQ *See Notes to the request form*

PCT

PCT/US 99/29493
RO/US 30 MAR 2000

POWER OF ATTORNEY

(for an international application filed under the Patent Cooperation Treaty;
(PCT Rule 90.4)

The undersigned applicant(s) (Names should be indicated as they appear in the request):
708N WYMAN PARK CENTRE
JOHNS HOPKINS UNIVERSITY

646 North Wolfe Street 3400 NORTH CHARLES STREET
Baltimore, Maryland 21218
United States of America

03/27/00

hereby appoints (appoints) the following person as:



agent



common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

SPRUNGER, Suzanne A. CHISHOLM, Patricia
AMERICAN HOME PRODUCTS CORPORATION
Patent & Trademark Department - 2B
One Campus Drive
Parsippany, New Jersey 07054
United States of America

GUYRE, Barbara A.

to represent the undersigned before



all the competent International Authorities



the International Searching Authority only



the International Preliminary Examining Authority only

in connection with the international application identified below:

Title of the invention: CYTOKINE RECEPTOR CHAIN

Applicant's or agent's file reference: GI 5268A-PCT

International application number (if already available): PCT/US99/29493

filed with the following Office

US

and to make or receive payments on behalf of the undersigned.

as receiving Office

Signature of the applicant(s) (where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading the request or this power):

Theodore O. Poehler
Dr. Theodore Poehler, Vice Provost, Research
Johns Hopkins University

Date:

3/27/00

PCT

POWER OF ATTORNEY

(for an international application filed under the Patent Cooperation Treaty)

(PCT Rule 90.4)

The undersigned applicant(s) (Names should be indicated as they appear in the request):

GENETICS INSTITUTE, INC.
87 CambridgePark Drive
Cambridge, Massachusetts 02140
United States of America

hereby appoints (appoint) the following person as:



agent



common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

CHISHOLM, Patricia
GYURE, Barbara A.
AMERICAN HOME PRODUCTS CORPORATION
Patent & Trademark Department - 2B
One Campus Drive
Parsippany, New Jersey 07054
United States of America

to represent the undersigned before



all the competent International Authorities



the International Searching Authority only



the International Preliminary Examining Authority only

in connection with the international application identified below:

Title of the invention: CYTOKINE RECEPTOR CHAIN

Applicant's or agent's file reference: GI 5268A-PCT

International application number (if already available): PCT/US99/29493

filed with the following Office US as receiving Office
and to make or receive payments on behalf of the undersigned.

Signature of the applicant(s) (where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading the request or this power):

Barbara A. Gyure
Barbara A Gyure, Assistant Secretary
Genetics Institute, Inc.

Date:

March 27, 2000

ANNEX G1

ANNEX G1

GI 5268A-PCT

**POWER OF ATTORNEY
(CONCERNING A GIVEN INTERNATIONAL APPLICATION)**

**PATENT COOPERATION TREATY
APPOINTMENT OF AGENT OR COMMON REPRESENTATIVE**

POWER OF ATTORNEY

The undersigned applicant(s):

GENETICS INSTITUTE, INC.

hereby appoints:

Suzanne A. Sprunger, Ph.D., Esq.
AMERICAN HOME PRODUCTS CORPORATION
Patent & Trademark Department - 2B
One Campus Drive
Parsippany, New Jersey 07054

☒ as agents

☐ as common representative

to act on its behalf before the competent International Authorities in connection with the international application on CYTOKINE RECEPTOR CHAIN (GI 5268A-PCT)

filed with the USPTO

as receiving Office and to make or receive payments on its behalf.

Place: Cambridge, Massachusetts

Date: 8 December 1999

Signature of the applicant (where there are several applicants, each of them must sign):

GENETICS INSTITUTE, INC.

By Barbara A. Gyure

Barbara A. Gyure, Assistant Secretary
Genetics Institute, Inc.

[Type the name under the (each) signature and add, in case of legal persons, an indication of the capacity in which the persons signs]

PCT

FEE CALCULATION SHEET

Annex t the Request

For receiving Office use only
PCT/US 99/29493
International application No.
Date stamp of the receiving Office

(13.12.99)
13 DEC 1999

Applicant's or agent's file reference	GI 5268A-PCT
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Applicant
GENETICS INSTITUTE, INC.

CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE	240.00	T	
2. SEARCH FEE	450.00	S	
International search to be carried out by <u>US</u>			
<i>(If two or more International Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)</i>			
3. INTERNATIONAL FEE			
Basic Fee			
The international application contains <u>61</u> sheets.			
first 30 sheets	455.00	b ₁	
<u>31</u> x <u>\$10.00</u>	310.00	b ₂	
remaining sheets additional amount			
Add amounts entered at b ₁ and b ₂ and enter total at B	765.00	B	
Designation Fees			
The international application contains <u>75</u> designations.			
<u>11</u> x <u>105.00</u>	1,155.00	D	
number of designation fees amount of designation fee payable (maximum 11)			
Add amounts entered at B and D and enter total at I	1,920.00	I	
<i>(Applicants from certain States are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D)</i>			
4. FEE FOR PRIORITY DOCUMENT (if applicable)	15.00	P	
5. TOTAL FEES PAYABLE			
Add amounts entered at T, S, I and P, and enter total in the TOTAL box	2,625.00		
	TOTAL		

240.00

450.00

455.00

310.00

765.00

1050.00

15.00

2520.00

<input type="checkbox"/> The designation fees are not paid at this time.
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MODE OF PAYMENT		
<input checked="" type="checkbox"/> authorization to charge deposit account (see below)	<input type="checkbox"/> bank draft	<input type="checkbox"/> coupons
<input type="checkbox"/> cheque	<input type="checkbox"/> cash	<input type="checkbox"/> other (specify):
<input type="checkbox"/> postal money order	<input type="checkbox"/> revenue stamps	

DEPOSIT ACCOUNT AUTHORIZATION (this mode of payment may not be available at all receiving Offices)	
The RO/ <u>US</u>	<input checked="" type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.
	<input checked="" type="checkbox"/> is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.
	<input checked="" type="checkbox"/> is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.
07-1060	13 December 1999
Deposit Account Number	Date (day/month/year)
	Signature